

June 2003

Children's Access to Primary Care in Greater New Haven, Connecticut

Nisha Anil Shah

Follow this and additional works at: https://opencommons.uconn.edu/uchcgs_masters

Recommended Citation

Shah, Nisha Anil, "Children's Access to Primary Care in Greater New Haven, Connecticut" (2003). *UCHC Graduate School Masters Theses 2003 - 2010*. 102.
https://opencommons.uconn.edu/uchcgs_masters/102

CHILDREN'S ACCESS TO PRIMARY CARE IN
GREATER NEW HAVEN, CONNECTICUT

Nisha Anil Shah

B.S., University of Connecticut, 1999

M.P.H., University of Connecticut, 2003

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Public Health
at the
University of Connecticut
2003

APPROVAL PAGE

Master of Public Health Thesis

Children's Access to Primary Care in Greater New Haven, Connecticut

Presented by

Nisha Anil Shah, B.S., M.P.H

Major Advisor Richard Stevens

Dr. Richard Stevens

Associate Advisor Judy Lewis

Judy Lewis, M.Phil.

Associate Advisor Sejal N. Dalwadi MD

Dr. Sejal Dalwadi

University of Connecticut
2003

Acknowledgments

I'd like to thank the MPH office for their help while I have been completing this project. I'd also like to thank my three advisors, Dr. Richard Stevens, Dr. Judy Lewis, and Dr. Sejal Dalwadi for their valuable input into this thesis. And finally, I'd like to thank my family and friends for their support and help over the past few years.

Table of Contents

I.	INTRODUCTION	1
II.	BACKGROUND	2
	<i>Current Status of Children's Health</i>	2
	<i>Improving Children's Access to Care</i>	4
	<i>Past Studies of Access to Care</i>	7
	<i>The Study Survey</i>	10
III.	METHODS	14
	<i>Survey Instrument</i>	14
	<i>Sample Size Calculation</i>	15
	<i>Sampling Method</i>	17
	<i>Survey Implementation</i>	19
	<i>Data Analysis</i>	20
IV.	RESULTS	22
V.	DISCUSSION	29
	<i>Findings of the Analysis</i>	29
	<i>Limitations</i>	33
VI.	CONCLUSIONS	35
	<i>Implications of the Findings</i>	35
	<i>Next Steps</i>	35
VII.	REFERENCES	
	<i>Appendix A</i>	37
	<i>Appendix B</i>	44
	<i>Bibliography of References</i>	45

List Of Tables

Table 1:	% Distribution of Families with Children and Distribution of Surveys to Towns	18
Table 2:	Analyses with Significant Chi-Square Tests (p-value <.05)	21
Table 3:	Analyses Performed without Significant Results	24

List of Figures

Figure 1:	Race/Ethnicity of Respondents	25
Figure 2:	Distribution of Child's Age	26
Figure 3:	Type of Health Insurance for Respondents' child	27
Figure 4:	Child's Regular Check-Up Rate	28

Introduction

The decrease in regular preventive care visits to a primary care provider by children after the age of five is being well-documented in studies. However, the reasons for this decline are not clearly understood by local community health departments. Children that do not regularly have preventive care visits are more likely to end up with inadequate preventive care than those children that have regular visits.

Concurrently, there has been an increase in the incidence of childhood chronic diseases such as asthma, obesity and diabetes. This may reflect the decreased preventive care visits of children. A survey instrument was previously created to assess the extent to which children, ages five through fourteen, in the towns surrounding and including New Haven, fail to visit a primary care provider on a regular basis. The survey was piloted at the Yale New Haven Hospital Primary Care Center to assess readability and comprehension. The survey was then revised to address concerns that arose in the pilot study. The five domains included in the study are demographics, health care and utilization, child health status, provider relationship and health beliefs. Ensuring that children have access to regular preventive care is necessary for development of preventive care behavior that will last into adulthood, as well as to possibly reduce the incidence of pediatric chronic diseases.

Background

Current Status of Children's Health

Preventive care is necessary to reduce and control the incidence of pediatric chronic diseases such as asthma, diabetes, and obesity. The 1999 National Survey of America's Families, which included 35,938 children under the age of eighteen, found that a substantial proportion of American children do not receive the recommended number of preventive health visits. The American Academy of Pediatrics (AAP) suggests that children aged three to sixteen make one well-child/preventive care visit each year except for years 7 and 9 when no visits are recommended. However, in 1999, more than 23% of children did not meet the AAP guidelinesⁱ. Weigersⁱⁱ (1996) found that children aged thirteen to seventeen were less likely than younger children to have a regular source of health care. In a similar study³, Hispanic children were less likely to receive the recommended well-child visits. Although slightly over two-thirds of the children do receive their recommended preventive care visits, there is clearly a need for improvement in specific populations. Children that do not have annual preventive care visits may be at a greater risk to develop chronic conditions.

Asthma is the leading chronic illness among children. It can be life-threatening if not managed properly. An estimated 5.3 million children under the age of eighteen suffer from asthma, and in Connecticut, 87,000 children (10.6%) have been diagnosed with asthma. Emergency room visits due to asthma are common; for example, in 1999, there were 658,000 pediatric emergency room visits due to asthma^{4,5}. In addition, African-American and Hispanic children have significantly higher rates of asthma emergency room visits when compared to Caucasian children⁶.

Due to the increase in asthma related emergency room visit, there has been a greater financial burden on hospitals' emergency rooms; often times, these emergency visits could be prevented with regular pediatric care. Asthma is also the cause for numerous school days missed. Annually, asthma accounts for 10 million lost school days in the US⁴. Unfortunately, the rates of asthma are increasing in Connecticut. The Connecticut Department of Health found in a 2000 study that asthma rates increased from 6% at the age of five to about 14% for ages 13-17.

Another chronic condition with high prevalence among children is diabetes. Diabetes mellitus is a group of diseases characterized by high levels of blood glucose. Type I diabetes, or juvenile onset diabetes, usually strikes at a younger age, and has a significant genetic component. Type 2 diabetes or adult-onset diabetes is a disorder in which cells do not use insulin properly. It is associated with obesity, and is increasingly being diagnosed in children and adolescents. Additionally, African Americans and Hispanic/Latino Americans are at higher risk for type 2 diabetes than Caucasians⁸. Following a strict diet and exercise program, losing excess weight and taking medication can control type 2 diabetes.

Obesity in the United States has reached epidemic proportions. Since 1980, obesity rates have doubled among children and tripled among adolescents. In Connecticut, approximately 26% of children aged six to seventeen are overweight⁹. Obesity is also more prevalent among African Americans. However, obesity can be significantly reduced by a combination of exercise and healthy eating. Pediatricians could play an active role in suggesting and encouraging these healthy behaviors. A recent study found that only 29% of overweight patients were encouraged by

physicians to lose weight, but when counseled, the patients were much more likely to lose weight¹⁰. The increasing prevalence of these three chronic health conditions among children is a substantial problem. The decrease in annual preventive care visits could be contributing to this escalating problem. One aim of this study is to examine whether there is a relationship between increasing chronic conditions and decreased preventive care visits.

Another benefit of regular preventive care is the possible decrease in emergency room visits. A 1996 study² found that children in fair or poor health (22.7%) were almost twice as likely to have had at least one emergency room visit compared to children in excellent or good health (12.8%). Chronic conditions among children are the cause for a significant percentage of these visits. Emergency room visits are costly, and although financial considerations should not be the primary reason for change, it might in fact be more beneficial for those financial resources to be used elsewhere in the healthcare system. Traditionally, emergency departments are not a good location for primary care or chronic illness care to occur. An example of using resources differently would be creating community programs aimed at increasing awareness of preventive care and its benefits.

Improving Children's Access to Care

In an attempt to address this, as well as other issues, several Yale graduate students developed a survey instrument targeted towards parents with children aged five to fourteen¹¹. The Yale New Haven Health Director's Forum, a meeting of health directors from New Haven County as well as members of the Yale Hospital Department of Community Health, agreed that the survey could provide pertinent information if distributed among residents. A pilot of the survey was conducted at the

Yale Primary Care Center to test the survey's readability among a lower socioeconomic status and less educated population. The survey questions were then evaluated; several questions were removed from the survey and others were reworded as needed for further clarity. The revised survey is the basis for this study. The purpose of this study is to address and study the issue of decreased preventive care visits for children between the ages of five and fourteen, and to evaluate whether this phenomenon could have an impact on the increases in observed chronic health conditions among children.

Access to healthcare has been addressed at the federal, state and local levels. For example, the Healthy People 2010 initiative is a national effort to eliminate health disparities; several health goals have been set to be reached by the year 2010. The United States national government has in place numerous regulations and standards in relation to primary and preventive care for American children. One of these measures is the Early and Periodic, Screening, Diagnosis and Treatment (EPSDT) standards for immunizations and screenings for all children from birth to eighteen years of age inclusive. The EPSDT specifically recommends that children visit their health care provider annually¹, as a minimum standard. The American Academy of Pediatrics (AAP) defines pediatric primary care as "health supervision and anticipatory guidance, monitoring physical and psychosocial growth and development; age-appropriate screening; diagnosis and treatment of acute and chronic disorders; and provision of first contact care". A preventive care/primary care visit for a child should include all these factors, and should allow the pediatrician to provide proper health supervision. The Guidelines for Health Supervision III¹², a manual from the AAP,

suggests that for adolescents, specific questions should be asked regarding nutrition, school, sleep patterns, risk assessment, and emotional well-being. These assessments allow the pediatrician to promote optimal health by addressing possible areas of concern on an annual basis, and perhaps preventing negative behaviors, or at least, providing information that might allow a behavioral change. Additionally, children with chronic illnesses may have significant psychosocial concerns that need to be addressed on a regular basis¹².

Children and adolescents have unique health care needs in comparison to the rest of the US population. Children's medical needs are constantly altering as they develop and reach their teen-age years. Their health and development are integrated in numerous ways that have potential for long term impact.³ Many morbidities begin to manifest during the pre-teen years, especially as lifelong patterns related to health behavior begin to form.¹³ The burden of preventive measures in respect to risky behaviors falls on the family, the community as well as the primary care providers. For primary care providers, current knowledge of issues of adolescent healthcare is crucial. But, for primary care providers to have the opportunity to make any lasting impact, requests must be made for regular contact that can be provided with the recommended visits. Interventions can then be suggested and monitored, as needed to guide the child in the direction of good health.

Historically, child health became defined in its own right after the Civil War when pediatrics emerged as a specialization of the medical field. Pediatricians treated children, but they also treated adults on a regular basis. Preventive care was not as much of a focus as was treating illnesses and ailments. The role of the pediatrician

continued to evolve as the care of mothers and children began to be more recognized as a public responsibility³. A major improvement has been a significant decrease in infant and child mortality rates. While childhood mortality was a significant concern of years past, other issues plague children's healthcare today. In 1949, the first national study was conducted on child health needs and services. The result of this survey was increased awareness of children's health care needs and eventually, the birth of programs such as Medicaid³. Medicaid is now the major source of health insurance for poor children. As public programs increased enrollment, they provided children of disadvantaged backgrounds with access to health care that other children were receiving. In fact, programs such as Medicaid allow for annual preventive care visits until the late teen years. Slowly, the need for and importance of preventive care has been recognized.

Past Studies of Access to Care

A recent study conducted by the Mesa County Colorado Health Department¹⁴ found disturbing trends. Their study was conducted to educate the families about the importance of appropriate self-care for children of various ages. One of the major findings in this study was that an annual well-child visit was more likely for children under five than for older youth in both 1997 and in 2001. Specifically, more than 95% of Mesa County children under age six had an annual health care visit. However, among six to twelve year olds the rate dropped to 80.8% and among thirteen to seventeen year olds, dropped to 76.6% in 2001¹⁴. The study shows results slightly lower than the national averages for these age groups.

In 1999, a national study was conducted using the Medical Expenditure Panel Survey (MEPS) and the Healthcare Cost and Utilization Project (HCUP) with similar

results. Overall, 71.5% of children were found to have regular office-based visits¹⁵. The analysis also found that Caucasian children were more likely than children in other racial groups to have had these visits¹⁵. Based on these few surveys, it becomes clear that race plays a factor in whether a child receives the recommended well visits throughout childhood. Another major factor is whether children have health insurance. Children with private insurance had the highest well-child visit rate of 76.3% and those uninsured had the lowest with a rate of 50.7%¹⁵.

In Minnesota, a study showed that forty-eight thousand children under the age of nineteen do not have access to regular healthcare. Of those, about 10,000 are children under the age of 6¹⁶. Children are less likely to have annual well-child visits as their age increases, but they are also less likely to have health insurance. This correlation does suggest one significant justification for why there is a decrease in well-child visits as children pass through adolescence. In an effort to change these statistics, Minnesota's major health goals (as outlined by Governor Ventura and Commissioner of Health Jean Malcolm) included expanding access to health care for all children and creating effective community based outreach programs to ensure that all eligible children are enrolled in health care programs.

Within the state of Connecticut, similar trends have also been noticed. Although the calculated values vary between various local and national studies in part due to regional differences in population, the trends are the same. First, children without health insurance are less likely to meet the EPSDT and AAP's recommendations on annual preventive care/well-child visits. Second, there tends to be a significant drop-off of children having regular well-child visits after age five.

This trend seems to continue through the teen years, with the older children the most unlikely to receive the recommended preventive care visits. Additionally, certain chronic conditions have been shown to be on the rise among youth. EPSDT data¹⁷ on Connecticut and data from Yale-New Haven Hospital¹⁸ (YNHH) indicate that about half of all children under the age of five had regular visits with pediatricians. The data also shows that only 25% of six-year-olds had a regular well-child visit in 1999¹⁷. Data from YNHH corroborates this finding of a drop-off in well child visits after the age of five¹⁸. This means that in 1999, three quarters of children at the age of six in Connecticut did not have a well-child visit. Granted, one explanation for this drop-off rate is that it coincides with the completion of most required immunizations. However, there are other variables that contribute to the drop off rate, as will be examined in this study.

These troublesome findings imply that the majority of children in Connecticut are not receiving adequate preventive care visits. Additionally, this trend has been suggested to result in ineffective monitoring of chronic health problems and other unhealthy behaviors^{6,18}. As a result, the increasing prevalence of chronic health conditions such as asthma, obesity and diabetes may be linked to the decrease in annual well child visits. Within this framework, it has been recognized that children, especially adolescents, need adequate access to health care since habits that lead to chronic disease development are established early in life¹⁶.

In Starfield's book Primary Care¹⁹, she mentions that "better accessibility of services was associated with a higher likelihood of first-contact care and continuity with the primary care physician". For appropriate primary care services to be

distributed, the place of care must be accessible and available; without this, care is delayed which can have a negative impact on the patient's health. Starfield divides access issues into two categories, socio-organizational access and geographic access. Socio-organizational access includes "the characteristics of resources that either facilitate or hinder efforts of people to reach care"¹⁹. An example of this would be social class. Geographic access is more straightforward. It refers simply to the characteristics related to time and distance required to receive care.

LuAnn Aday, in her book¹³, categorizes access problems to healthcare in a different manner. One group consists of "potential access" problems, consisting of factors that may make it more difficult for families or children to receive care. Examples of these factors include income and health insurance status. The second group consists of "realized access" problems, which refers to having reduced services due to finding care unsatisfactory for some reason. For example, a realized access problem would include issues related to office wait, or trust and confidence in the pediatrician. The survey developed for this study will examine both types of access problems.

The Study Survey

Since school-aged children are not yet independent, the majority of the healthcare responsibility falls upon the parents. Parents of these children are the ones responsible for obtaining health insurance, scheduling appointments, and bringing their children to their primary care provider. Therefore, it can be assumed that the parents' own beliefs about health care are an important factor in understanding the decreasing frequency of preventive care visits among school-aged children. Parents' healthcare beliefs will be assessed in the study survey.

A crucial reason for decreasing preventive care visits is related to insurance. Of all the major industrialized countries in the world, only the United States and South Africa have not developed a national health insurance system²⁰. Children with no insurance are less likely to see their primary care provider because of the financial burden on the parents. In the early nineties, the uninsured non-elderly population in Connecticut was slowly increasing⁷. However that rate has steadied somewhat today due to public programs such as Husky Plus and Husky B. These plans, like most other public plans in Connecticut do provide coverage for primary care services. As a result, children with public insurance should still be visiting a primary care physician for preventive care visits. Nevertheless, although Hispanic and African American children are more likely to have public insurance, they still have much lower rates of annual preventive care visits. In fact, in McCormick et al's study, four times as many black children were covered by public health insurance as white children¹⁵. In Health Care For Children, Dr. Ruth Stein³ suggests that "poor, minority and uninsured children are twice as likely as non-poor, white uninsured children to lack usual sources of care, and nearly twice as likely to wait sixty minutes or more" for a pediatrician visit.

This illustrates an interesting phenomenon. Public insurance does cover regular preventive care visits for children, and there are high rates of African American and Hispanic children covered by public insurance. Yet, they are still more unlikely to have the recommended preventive care visits. It has been clearly documented in several studies that African American children and Hispanic/Latino American children are less likely than Caucasian American children to have regular

well-visits^{1,3}. Potential access barriers may play a large role in this, but it appears that realized access plays a role as well. According to Aday, ethnicity/race has a strong association with the length of time spent in a physician's waiting room¹³. She suggests that Hispanics are much less likely than the Caucasian population to have waits of half an hour or less. However, wait time may also be correlated to location of regular care. For children having a regular source of care, eight out of ten identified physician's offices, private clinics or HMO's as their location of regular care²¹. Other realized access barriers include factors directly tied to the physician, or pediatrician. For example, a person who is more comfortable with their physician is more likely to visit the physician. Other factors are related to issues of trust and competency. This study will examine the roles these potential barriers may play within New Haven County.

Another factor the study survey will measure is parental knowledge of preventive care. If parents are not familiar with the guidelines for preventive care, then understandably they cannot conform to the established guidelines. Although this may seem too simple an explanation, parents of a lower socioeconomic status may be less likely to realize that preventive care is an important part of medical care. Because their financial resources are limited, they may consider that medical visits are only needed in cases of emergencies. Several of the survey questions are directed towards understanding parents' views of preventive care.

Clearly, numerous variables may influence access to healthcare, and have implications for chronic health conditions among children. Several of these variables work independently, while other variables have a combined effect. By monitoring

responses within the New Haven community, this study should provide valuable information regarding general health of children, problems encountered with access, and parents understanding of their children's health and health care needs.

Materials & Methods

Survey Instrument

The study questionnaire was divided into five components; demographics, health care and utilization, child health status, provider relationship and health beliefs. The questions were primarily multiple choice, and Likert Scales. Likert Scales are commonly used to “quantify attitudes, behaviors and domains of health-related quality of life”²². On the Likert Scales, respondents reacted to statements regarding access to health care and beliefs about health care providers. This allowed the respondents to select a response that best measures the degree of their beliefs on a scale of 1 to 5. The study survey consisted of thirty-three questions and took approximately 15 minutes to complete. It will provide data to help understand why annual preventive care visits for children decrease after the age of five.

To ensure that the complete target population was reached, a native Spanish speaker translated the survey into Spanish. According to the 2002 US Census data, 16% of the New Haven, Connecticut population is Hispanic or Latino. Additionally, it has been shown that Hispanic and Latino children are less likely to receive regular pediatric care, and therefore, it is crucial to obtain data from this community.

There are several valid ways of collecting data from a survey. , The decision was made in conjunction with the Yale-New Haven Health Director’s Forum that a mail survey would be conducted of the ten participating towns in New Haven County.

Sample Size Calculation

Three key factors that need to be determined before the survey distribution are the required final sample size, the size of the sample pool needed to reach the final sample size, and the distribution rates for the towns involved. Bartlett, Kotrik and Higgins²⁶ state that “Within a quantitative survey design, determining sample size is essential”. In order to do so, the first step involves examining the survey variables and determining whether the major variables will produce continuous or categorical data.

In this survey, the majority of the data is nominal categorical data. Nominal data is one of the simplest data types, where the values fall into unordered categories so that numbers are often used to represent the categories²⁵. Upon determining that the majority of the data is categorical, a sample size formula was chosen. The recommended sample size formula for categorical data is:

$$\text{Sample Size}(n) = \frac{Z^2 \bullet p \bullet (1-p)}{C^2}$$

In this formula, Z represents the Z value, p represents the percentage picking a choice (p • (1-p) represents the estimate of variance) and C represents the confidence interval or acceptable margin of error. To achieve high statistical reliability, the confidence level will be set to 95% and the corresponding Z value is 1.96. The acceptable margin of error will be .05. Therefore, the final sample size formula results in:

$$\text{Sample Size}(n) = \frac{(1.96)^2 \bullet (0.5)(0.5)}{(.05)^2} = 384$$

Therefore, a sample size of 384 respondents would produce results with high statistical significance.

Next, the size of the sample pool must be determined. To accomplish this, the respondent rate and the incidence of the appropriate population must be known. The targeted population is families with children aged 5-14 in the participating ten towns. Using the US Census Bureau data from 2000, it was determined that the prevalence rate of households with children under 18 is 30.5%. The response rate is expected to be 10% based on conversations with the Yale New Haven Health Director's Forum about previous surveys that have been distributed by this group in New Haven County. Using the formula for the sample pool size, the calculated value is:

$$\begin{aligned}\text{Sample Pool Size} &= \frac{\text{sample size (n)}}{(\text{incidence of households with children under 18}) \bullet (\text{response rate})} \\ &= \frac{384}{(.10) \bullet (.305)} = 12,590\end{aligned}$$

The ideal sample pool size was determined to be a population of 12,590 households. This sample pool would theoretically provide a final sample size of 384 completed surveys to produce highly significant results.

However, the sample pool size had to be restricted due to financial restrictions. Upon discussion with the Yale New Haven Health-Directors' Forum, it was determined that a sample size of 5000 would be affordable. After concluding that 5000 surveys would be mailed, the distribution among the ten participating towns needed to be determined. Table 1 shows the incidence rates of families with children under 18 using the US Census data from 2002, and the calculated percent distribution each town received from the total 5000 surveys.

Sampling Method

There are various methods to obtain a sample of appropriate households. Several vendors were contacted to find one that would fit within the required budget and still provide an adequate list. The vendor chosen to provide the sample of households with children aged 5-14 was J.T.Wack & Company. J.T.Wack & Company provided the random distribution list of 5000 households in the appropriate towns. The distribution by town is listed in Figure 1. J.T. Wack & Company is based in New Haven, CT was able to provide the list at discounted cost to the Yale-New Haven Health Director's forum.

Table 1: % Distribution of Families with Children and % Distribution of Surveys to Towns

<i>Town</i>	HH w/kids under 18	HH % of Total HH	Surveys Sent	Survey % of Surveys Total
Bethany	706	1.40%	83	1.70%
Branford	3224	6.52%	414	8.28%
Cheshire	3656	7.40%	594	11.88%
East Haven	3164	6.40%	403	8.06%
Guilford	2902	5.88%	337	6.74%
Hamden	5983	12.11%	680	13.60%
Madison	2547	5.16%	320	6.40%
New Haven	13799	27.94%	652	13.04%
North Branford	1817	3.68%	109	2.18%
North Haven	2665	5.40%	425	8.50%
Orange	1663	3.37%	300	6.00%
West Haven	6011	12.17%	557	11.14%
Woodbridge	1251	2.53%	126	2.25%
Total	49388	99.96%*	5000	99.77%*

* Note that percentages may not sum to exactly to 100% due to rounding.

The mailing distribution for this study was random to ensure an accurate representation of New Haven County. The vendor provided list of addresses is separated into different strata (groups) according to the town of residence. In other words, the sample population for this study was stratified by town. When creating the distribution list, addresses from each stratum (town) were selected so that the number of addresses chosen from each town was proportionate to the total number of appropriate households in each town. This stratified random sampling “takes into consideration information that is known about the elements of a population and that might affect the characteristic of interest”²⁵ However, when the mailing list was received from J.T. Wack & Co., the distribution for each town did not match the specifications (Table 1).

Survey Implementation

Once the surveys (English & Spanish copies) were approved by the Yale New Haven Health Director’s Forum, the printing and expenses of supplies was covered by the Yale Department of Community Health. A group of volunteers at Yale Hospital coordinated stuffing of envelopes and affixing mailing labels. Each envelope contained a cover letter explaining the survey as well as the survey, with the Spanish version on the back of the English version. In addition, a postage paid envelope was enclosed for the surveys to be returned to the Quinnipiack Valley Health Department office in North Haven, Connecticut. Respondents were asked in the cover letter to return the survey within two weeks of receiving the survey.

Although the surveys were mailed out the week of December 9, 2002, due to the mail route used by Yale Hospital before the mail reaches the local post office, the

surveys did not actually reach the local post office until the second week of January 2003. The surveys were then sent to the residences from the local post office. The delay resulted in a significant advantage. If the surveys had left the local post office in December, the surveys would have been bogged down in holiday mail. Also, due to the holidays, there was a possibility respondents might ignore the survey due to other time demands resulting in a lower response rate. Instead, the surveys reached the respondents post-holidays and at the beginning of the New Year when many people many people tend to make uplifting resolutions that could affect the response rate in a positive manner.

1032 surveys were returned, resulting in a return rate of 20.64%. Of the returned surveys, 803 were complete. The complete surveys were then entered into a computer database instrument. EpiInfo 2000, Version 6.04 (available on the CDC website) was used as the data collection instrument.

Data Analysis

For analysis, the SAS system, version 8.0, a statistical analysis software system was used to calculate frequencies (Appendix A) and to perform chi-square tests for the univariate tables, examining factors that may influence the rate of preventive care visits for children. To avoid small cell numbers in variable categories, these categories were collapsed to form dichotomous variables for the analysis. 95% confidence intervals were also calculated for the univariate analyses using SAS. The variables that achieved a significant p-value (0.05 or less) for the chi-square tests are listed in Table 2.

Table 2: Analyses with Significant Chi-Square Tests (p-value <.05)

Independent Variable	Dependent Variable	Chi-Square Statistic
Long Wait in Waiting Room	Frequency of regular check-ups	0.0469
Transportation/Work	Frequency of regular check-ups	0.0040
Insurance Payment	Frequency of regular check-ups	<.0001
Preventive Care Knowledge From My Doctor	Frequency of regular check-ups	0.0063
Regular Source of Preventive Care	Frequency of regular check-ups	0.0283

Results

Of the 5000 surveys that were distributed, a total of 1,036 were returned. This resulted in a return rate of 20.72%. However, 167 surveys were returned uncompleted, generally with a note from the respondent stating that he did not fit into the target group of families with children aged 5 to 14. These surveys were not entered into the database. Another 66 surveys were returned by families with children outside the ages of 5 and 14; these too were not entered into the database. This resulted in a remaining 803 surveys that were entered into the EpiInfo database. This provided an ample sample size to achieve statistically significant results according to calculations presented previously.

Appendix A lists the frequencies of responses to the survey questions. The ethnicity distribution was largely homogeneous, with 91.78% of the respondents being white, non-Caucasians. Only about 5.50% of the respondents were African American or Hispanic. Out of the 5000 surveys distributed, not a single survey was returned in the Spanish version. About 92% of the population was college educated, and 80.57% had private insurance. Because the percentage of the minority respondents is drastically lower than the white, non-Hispanic respondents, no significant conclusions can be made regarding the effects of ethnicity. Even if the minority groups are dichotomized, their total frequency is only 8.22% of the total respondent population, much lower than the actual percentage of minority groups in New Haven County.

99.38% of the respondents responded their child had a regular source of pediatric care. This left only a marginal portion of the respondents without a regular

source of pediatric care. And 98.38% of the respondents responded that they took their child to a physician's office for health care. When respondents were asked how often their child was taken to a physician for a regular check-up, 78.18% responded every year. 16.40% responded once every two or more years, and 5.42% responded more than once a year. Therefore, about 16% of the respondent population did not meet the annual check-up guideline.

In terms of chronic diseases, it was found that 14.57% of respondents' children have asthma, 6.60% have weight problems, and 0.75% have diabetes. When asked what they thought of their child's health status, 86.27% responded "Excellent" and 13.11% responded "Good".

Chi-Square tests were run on all variables against the variable asking how often the respondents' child visited a health professional for regular check-ups. Of all the variables, only 6 (Table 2) produced statistically significant results (p -value $< .05$). "Long wait in the waiting room", "Transportation/Work", "Insurance Payment", "Preventive Care Knowledge From My Doctor", and "Regular Source of Preventive Care", all were found to have significant results. Other cross tabulations were run as well, without producing any significant results (Table 3).

Table 3: Analyses Performed without Significant Results

1. Child's Health Status by Where Child Goes for Health Care
2. How often should child go to PCP by Health Insurance Type
3. Missed School Days by Children with Weight Problems
4. Missed School Days by Asthma
5. Missed School Days by Diabetes
6. Child's Health Status by Knowledge of Preventive Care
7. When do you take child to doctor by Knowledge of Preventive Care

Figure 1:

Race/Ethnicity of Respondent

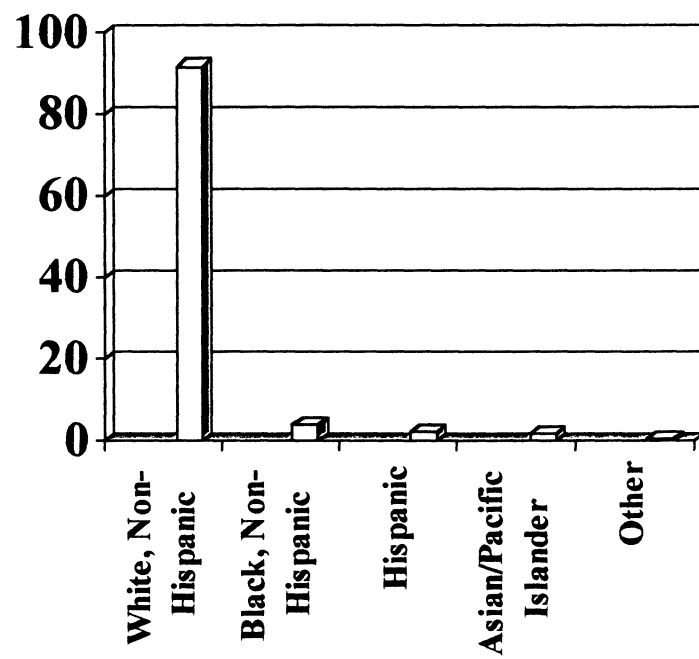


Figure 2:

Distribution of Child's Age

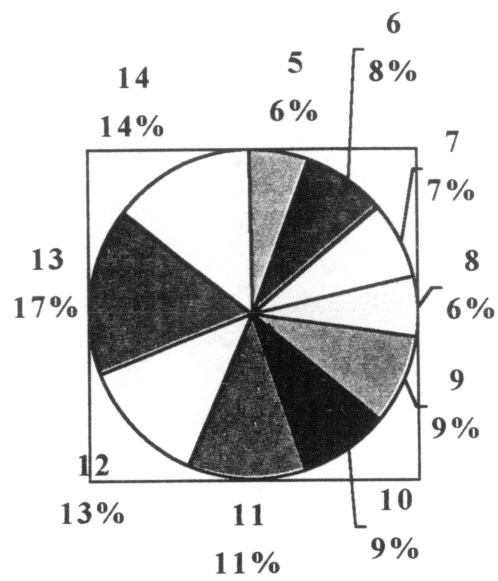


Figure 3:

Type of Health Insurance for Respondent's Child

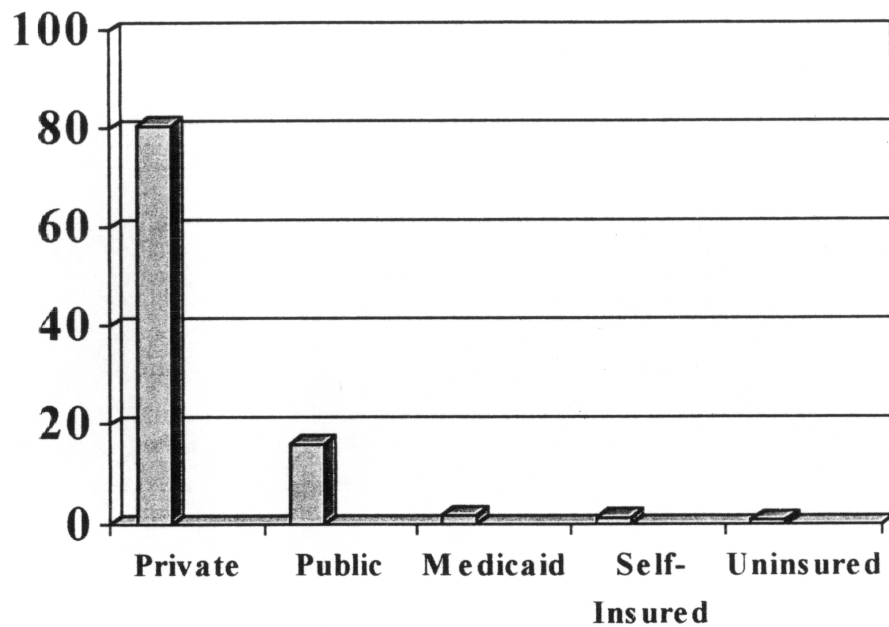
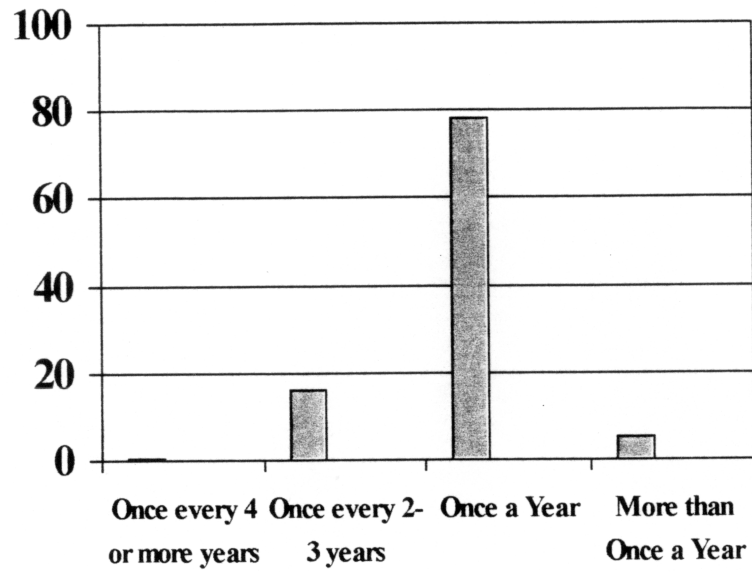


Figure 4:

Child's Regular Check-Up Rate



Discussion

Findings of the Analyses

Two of the most popular methods for survey distribution are telephone surveys and mail surveys. Other methods include in-person surveys and interest surveys. However, for this study, only mail surveys and telephone surveys were considered. Some of the factors to consider when choosing a survey method include turn-around time, available budget, complexity and volume of the information required, and the population to be sampled²³. For this study, the most important consideration was budget.

Telephone surveys have many benefits and are commonly used in public health research. Telephone interviewing results in a quick turn-around time since the interviewer collects the data as the survey is asked. In addition, telephone surveys allow for quality control of the data collection process²⁴. However, there are drawbacks to telephone interviewing as well. First, it is more expensive than a mail survey since it involves hiring telephone interviewers, as well as the cost of the calls. Second, it can often be difficult to maintain the respondents' interest if the survey is lengthy²³. Telephone interviewing is also difficult when a respondent has to answer a complicated question on the telephone²⁴. The question may cause confusion and if not properly explained, could result in the respondent incorrectly answering the question.

Mail surveys, on the other hand, have a low associated cost compared to other survey methods. A small staff is needed to prepare the envelopes for mailing and then, to enter the data collected. Only one person will be needed to complete the data collection in this study. Another advantage to mail surveys is that it allows the

respondents have the opportunity to respond to the questionnaire on their own time. There is no need for the respondents to rush through the survey as may be the case with telephone interviewing. There are however, some drawbacks to mail surveys. The most significant of these is that mail surveys have a low response rate. Another drawback is that the turn-around time can be slow due to the postal system. Fortunately, a quick turn-around time was not necessary for this study.

In considering the two survey options, calls were made to the Roper Center at the University of Connecticut and Survey Sampling, Inc. of Fairfield, Connecticut to explore the costs of telephone lists that could be bought from these two vendors. However, the costs for telephone lists from both vendors were considered to be outside the budget.

According to the US 2000 census data, the ten combined towns in this study have 49388 families with children in the appropriate age range. Of the 5000 surveys mailed at random, 1036 surveys were returned. However, due to the error with the mailing list, the city of New Haven was undersampled. The return rate, about 20%, was completely unexpected. Expected estimates had been in the range of 5% to 10%. There may be several reasons for this high return rate. First, the surveys were mailed out at the end of year of 2002, and reached residences the first few weeks of January. Because of the new year, families and individuals are generally more concerned with starting the year off on the right foot, which may include being more attentive of public services, and requests for community support, as in the case of this survey. The busy holiday season had passed, and respondents were more likely to have some spare time to complete the surveys.

Another reason may be the form of the cover letter that was provided with the survey. The cover letter indicated that the study was part of Yale Hospital's community health efforts, along with a list of the health directors involved in this project. This may have lent convincing credibility to the study and the survey. 88 of the respondents indicated they worked for Yale in some capacity; so this bond also provides a reason for the high return rate. Other respondents indicated they worked in healthcare, which gave them a second perspective and reason to complete the survey.

However, the main motive for the respondents to fill out the survey was probably due to the fact that the study survey is designed specifically to address health care issues for children. A survey that might be normally ignored might be given a second glance just on the fact that it is in support of children receiving regular preventive care. There is a growing awareness within the state of Connecticut and across the country that there are some huge gaps in access to health care for children. There has also been a growing awareness among the public of the conditions that are starting to plague children at younger and younger ages.

The study found that there are alarmingly high rates of asthma, obesity and allergies among the respondent population. The asthma rate among this population was found to be 14.57%, higher than the Connecticut Department of Health's rate of 10.6% (among children under 18). This fact is made even more somber because this is a highly educated, mostly white respondent population belonging to a higher socioeconomic status (SES). If this is the status among a higher SES, one can only imagine what the rates are at a lower SES. One possible explanation for the high

asthma rate could be that respondents who have sicker children are more likely to respond to the survey.

A strong relationship was established between decreased preventive care visits and medical insurance, as was expected. Those without insurance or with insurance that did not cover annual visits were less likely to provide their children annual preventive care visits. Those with private medical insurance were most likely to meet the annual preventive care visit guidelines.

A correlation was also found between the outcome variable and whether the respondent had received preventive care knowledge from his doctor. This suggests that physicians are able to influence patients' perceptions of routine care, and have a strong involvement in the routine care the respondents' children receive. Thus, an approach to improving annual preventive care rates for children might involve programs based around the physician's offices. However, this may overlook the population that does not have a regular physician.

An association was found between the outcome variable and transportation/work and waiting room time. This implies that some of the reasons for decreased preventive care visits may have very little to do with knowledge of the importance of preventive care visits. Instead, there seems to be an issue of practicality. In a family where both parents, or a single parent, are working daily, demands are made on time and resources, and occasionally these factors may impede on children receiving the annual visits that are needed.

In summary then, among the respondent population, most families have heard of preventive care, and a large percentage do bring their children to a physician for an

annual preventive care visits. For those that do not, the main reasons appear to be transportation, work, and of course, insurance. The data does suggest that there are high rates of chronic conditions among this population despite the fact that the respondents are largely educated and insured.

Limitations

Despite the successful return rate for this study, there were several limitations. The most salient of these is that the target population was not reached. Less than 10% of the respondent population consisted of minorities and most respondents had completed college. Among the total population of the towns surveyed, 11.30% of the population is African American and 10.10% of the population is Hispanic. Therefore, the respondent population is not representative of New Haven County. This lack of diversity suggests several things. First, the sample pool may not have been the most appropriate. Towns such as Guilford, Cheshire, Branford, and Madison have extremely high populations of educated Caucasian families. Unfortunately, the survey did not track which town or zip code the survey was returned from, so no determination can be made as to the residence location of the majority of the respondents. An assumption could be made that the majority of respondents were from towns such as these, explaining the lack of diversity.

Additionally, one of the uncertainties with a mail survey is that the more educated and concerned respondents, those that have more faith in public programs are most likely to respond. The population that does not respond to a mail survey is truly the population that needs to be sampled. This is the population that will be uninsured, uneducated, and that might have some distrust of community involvement.

Although the surveys were mailed with an English and Spanish version, not a single copy of the Spanish version was returned. This can be explained in two ways; either a large Spanish speaking population was not reached, or they were reached but the Spanish-speaking respondents were uninterested in the survey. If this is the case, then greater attempts may need to be made to attract this population to respond to the survey. One way this could be done would be to provide a monetary incentive for respondents completing the survey.

In comparison to the pilot study where two researchers personally distributed surveys at the primary care center, these results were less diverse. Within the pilot study respondent population, 53% of the respondent population was African American and 22.5% of the respondents were Hispanic. This study did actually show that African Americans and Hispanic were less likely to take their children for a regular preventive care visit than Caucasians. That study also showed higher rates of chronic diseases among these minority groups in comparison to the Caucasian population. Therefore, it could be assumed that more informative data can be achieved from this survey if the proper population is reached. There appeared to have been a bias towards the Caucasian respondents in this study.

Conclusions

Implication of the Findings

Although this survey did produce some useful data, there are still many unanswered questions. One of these is how ethnicity or race affects access to care. Because such a small percentage of the respondent population was non-Caucasian, the findings cannot be applied to the general population.

But among the respondent population, there are a significant proportion of adults (about 16.5%) that do not take their children for annual preventive care visits, although they have knowledge of preventive care. This is the population for which community programs could be targeted to increase their awareness of the importance of annual preventive care visits. There may also be a need for programs addressing obesity and asthma, as these two had high prevalence among the respondents' children.

This survey does confirm what has long been known. The educated, middle-class population generally follows the guidelines for preventive care in regards to children. They are more likely to seek advice from a physician and will take their children to a physician regularly. For those that do not, insurance coverage appears to be the main barrier.

Next Steps

For a thorough analysis of the New Haven County population, a method needs to be designed that will target the lower SES population. One way to do this would be to repeat the survey in a selected few towns including New Haven, and attempt a phone survey that will allow direct contact with the respondents. Financial incentives

may also help target the lower SES population. Gathering data from this population would be pertinent in truly defining the degree to which access to care is impaired in that area of Connecticut. It will also allow for a deeper understanding of the problem of chronic diseases among this population. If the population is found to have significant barriers to primary care, then it can be determined whether this does actually affect the rise in chronic diseases within children in Connecticut.

Appendix A: Demographics, Health Care and Utilization, Child Health Status, Provider Relationship and Health Beliefs- Frequencies

1. What is your sex?
 - 32.75%: male
 - 67.25%: female
2. What is your race/ethnicity?
 - 91.78%: White, Non-Hispanic
 - 3.99%: Black, Non-Hispanic
 - 2.37%: Hispanic
 - 1.49%: Asian/Pacific Islander
 - 0.37%: Other
3. How many children (18 years old or younger) are in your household?
 - 21.67%: 1 child
 - 49.94%: 2 children
 - 22.91%: 3 children
 - 4.36%: 4 children
 - 0.62% : 5 children
 - 0.37% : 6 children
 - 0.12% : 7 children
4. Please indicate the age of the child you will be answering questions about.
 - 5.73%: 5
 - 8.47%: 6
 - 7.47%: 7
 - 5.73%: 8
 - 8.84%: 9
 - 8.59%: 10
 - 11.21%: 11
 - 12.83%: 12
 - 16.81%: 13
 - 14.32%: 14
5. Is at least one of the adults employed full-time?
 - 96.38%: Yes
 - 3.62%: No

-Appendix A Continued-

6. What is the highest level of education attained by an adult in the household?
 - 91.91%: some college or more
 - 7.72%: high school diploma
 - 0.37%: some high school
7. What language do you speak at home?
 - 98.63%: English
 - 0.87%: Spanish
 - 0.50%: Other
8. When did you yourself see a physician?
 - 30.64%: when I'm sick
 - 68.99%: for regular check-ups
 - 0.37%: Other
9. What type of health insurance does your child have?
 - 80.57%: Private (AETNA, BCBS, Connecticare)
 - 16.06%: Public (PHS, HUSKY A/B, CHN)
 - 1.49%: Medicaid (Title 19)
 - 1.25%: Self-insured
 - 0.62%: Uninsured
 - 0%: Don't know
10. Does your child have a regular source of pediatric care?
 - 99.38%: Yes
 - 0.63%: No
11. Where do you take your child for health care?
 - 98.38%: Physician's Offices
 - 0.50%: Outpatient Clinics
 - 0.75%: Health Center
 - 0.12%: Emergency departments
 - 0.12%: Urgent care/walk-in clinics
12. On average, how often does your child visit a physician for health professional for regular check-ups?
 - 0.38%: Once every 4 or more years
 - 16.02%: Once every 2-3 years
 - 5.42%: More than once a year
 - 78.18%: Once a year
 - 0%: Don't know

Appendix A Continued-

13. Has your child ever been admitted to the hospital?
- 21.51%: Yes
 - 78.49%: No
 - 0%: Don't know
14. Of those that responded Yes to number 13, what were the reasons for the overnight stay?
- 14.62%: Complications due to a chronic health condition
 - 66.08%: Short-term health condition
 - 17.54%: Other
15. Have you ever been told by a health care professional that your child has any of the following?
- 14.57%: Yes for asthma
 - 6.60%: Yes for weight problems
 - 0.75%: Yes for diabetes
 - 7.72%: Yes for chronic infections
 - 1.37%: Yes for immune disorders
 - 2.74%: Yes for behavioral/mental problems
 - 9.84%: Yes for dental or eye problems
 - 3.75%: Yes for other
16. Is your child currently up-to-date for immunizations?
- 99.75%: Yes
 - 0.25%: No
17. What do you think of your child's health status?
- 86.27%: Excellent
 - 13.11%: Good
 - 0.62%: Fair
 - 0%: Poor
18. On average, this past school year, how many missed school days were due to chronic illness?
- 8.30%: More than 14 days
 - 22.04%: 10-14 days
 - 32.31%: 5-9 days
 - 37.23%: 1-4 days
 - 0.12%: None
 - 0%: Can't remember

-Appendix A Continued-

Please rank in order of importance (1=extremely important, 2 =very important, 3= somewhat important, 4= not very important, 5= not important at all) reasons why routine medical care did not occur for your child during the last year.

19. Long wait in the waiting room.

- 6.27%: 1
- 7.02%: 2
- 8.77%: 3
- 5.89%: 4
- 72.06%: 5

20. Transportation/Work

- 3.88%: 1
- 4.76%: 2
- 7.52%: 3
- 6.14%: 4
- 77.69%: 5

21. Insurance/Payment

- 8.77%: 1
- 5.01%: 2
- 6.89%: 3
- 5.51%: 4
- 73.81%: 5

22. Don't know where to go.

- 2.14%: 1
- 1.63%: 2
- 3.52%: 3
- 3.64%: 4
- 89.07%: 5

23. Other child care responsibilities:

- 2.26%: 1
- 2.13%: 2
- 6.27%: 3
- 4.51%: 4
- 84.84%: 5

-Appendix A Continued-

24. My child doesn't want to go to the doctor.

- 1.64%: 1
- 2.01%: 2
- 3.52%: 3
- 3.14%: 4
- 89.69%: 5

Please answer the following items on a scale from 1 to 5 (1=Strongly agree; 2=Agree; 3=No Opinion; 4=Disagree, 5=Strongly Disagree):

25. I feel comfortable telling my child's health care provider about his/her medical concerns.

- 91.89%: 1
- 6.74%: 2
- 0.62%: 3
- 0.12%: 4
- 0.62%: 5

26. My child's health care provider listens to what I have to say about my child's health and answers my questions.

- 84.39%: 1
- 13.11%: 2
- 1.25%: 3
- 0.50%: 4
- 0.75%: 5

27. My child's health care provider explains medical information to me.

- 82.50%: 1
- 14.38%: 2
- 2.00%: 3
- 0.88%: 4
- 0.25%: 5

28. My child's health care provider is able to make my child feel better.

- 75.09%: 1
- 21.15%: 2
- 2.88%: 3
- 0.50%: 4
- 0.38%: 5

Appendix A Continued-

29. I think that anyone can get sick and there's nothing anyone can do to stop it.

- 15.13%: 1
- 15.63%: 2
- 15.13%: 3
- 20.25%: 4
- 33.88%: 5

30. I think that getting regular check-ups for my child is important.

- 88.11%: 1
- 8.39%: 2
- 1.50%: 3
- 0.75%: 4
- 1.25%: 5

31. Where have you heard/seen the term preventive care?

- 4.99%: I have not heard this term.
- 74.91%: From my doctor
- 39.58%: From another health care worker
- 48.88%: From a family member/friend
- 62.67%: In a magazine/newspaper article
- 50.56%: On TV
- 17.82%: Other

32. When do you take your child to the doctor?

- 96.75%: When he/she is sick or in pain.
- 97.0%: For regular check-ups
- 36.95%: When I have a medical question or concern about my child's health.
- 6.49%: Sometimes when my child is not sick but I think he/she should go.
- 15.25%: When I want a prescription for my child.
- 1.63%: Other

Appendix A Continued-

33. How often do you think your child should go to the doctor for a regular check-up?

- 5.14%: More than once a year
- 81.56%: Once a year
- 11.92%: Once every two years.
- 1.00%: Once every three years.
- 0.38%: Never when he/she is not sick.

Appendix B: Cover Letter Mailed out with Study Survey

November 26, 2002

Dear Community Member,

Access to Primary Care Providers, Pediatric Survey/Project

The survey you are receiving is part of a study in New Haven County sponsored by the Yale-New Haven Health Directors Forum. This survey was designed to address the issue of why there is a decrease in regular visits to a primary care provider (PCP) by children after the age of 5. The information we are trying to collect will be used to develop community programs if needed. It is extremely important and we appreciate your participation. Please complete the survey within 2 weeks of receiving it, and return it in the pre-stamped envelope that has been included. The survey will only take a few minutes; your response is greatly appreciated. Thank you for your help.

Sincerely,

Dept. of Community Health

** The actual cover letter was on Yale New Haven Hospital letterhead and listed all members of the Yale New Haven Health Directors Forum.*

References

1. Health Care Financing Administration. *Medicaid and EPSDT*. HCFA website: www.hcfa.gov/medicaid/epsdthtm.htm
2. Weigers ME, Weinick RM, Cohen JW. *Children's Access to Health Care*. Children's Health 1996; MEPS Chartbook No1
3. Stein, Dr.Ruth. *Health Care for Children*. United Hospital Fund of New York. 1997
4. American Lung Association. *Asthma in Children Fact Sheet*. June 2002. ALA website: www.lungusa.org/asthma/ascpedfac99.htm
5. Connecticut Department of Public Health. *Fast Facts about Asthma*. 2001. CT DPH website: www.dph.state.ct.us/bch/eeoh/asthma/asthmafast.htm
6. Association for Supervision and Curriculum Development in VA. Health in Education Initiative. *Health Disparities and Access to Care*. 2002. ASCD website: www.ascd.org
7. Connecticut Department of Public Health. *Epidemiology of Asthma in Connecticut*. 2000. CT DPH website: www.dph.state.ct.us/bch/eeoh/asthma/asthmaepi.htm
8. National Diabetes Information Clearinghouse. *National Diabetes Statistics*. 2000 NIH website: www.niddk.nih.gov/health/diabetes/pubs/dmstats.htm
9. Connecticut Department of Public Health. *An Assessment of Health Status and Health Services*. 2000 CT DPH website: www.dph.state.ct.us/epi/htm
10. Center for Disease Control, Department of Health and Human Services. *Preventing Obesity and Chronic Diseases Through Good Nutrition and Physical Activity*. CDC website: www.cdc.gov/dhhs/obesity.htm
11. Chang, Heidi et al. *Access to Primary Care Providers by Children in the Greater New Haven Area*. Yale University Community Project #28. Spring, 2001.
12. American Academy of Pediatrics. *Guidelines for Health Supervision III*. Third Edition;1997.
13. Aday, LuAnn. *Access to Medical Care in the U.S.: Who Has It, Who Doesn't*. Pluribus Press, 1984.

-
14. Mesa County Colorado Health Department. *Children and Youth Health Indicators*. 2001. MESA website: Mesa County website: www.mesa.co.us
 15. McCormick Marie, Kass, Barbara et al. *Annual Report on Access to and Utilization of Health Care for Children and Youth in the United States*. 1999. Pediatrics. Vol. 105 No. 11, 2000: 219-230
 16. Minnesota Medical Association. *Children's Access to Health Care*. January 2001. MMA website: www.ramseymed.org/members/issuebrief.htm
 17. Connecticut Children's Health Project. *Quarterly Report to the Children's Health Council on EPSDT On-Time Visit Rates*. Third Quarter, 1999. Report Date- 3/27/00
 18. Community Health Network of Connecticut, Inc. *EPSDT Report for Yale-New Haven Hospital PCC*. Report Date 1/9/01
 19. Starfield, Barbara. *Primary Care: Balancing Health Needs, Services, and Technology*. Oxford University Press, 1998.
 20. AOG Educational Bulletin. *Timing and Preventive Health Care Visits for Female Adolescents*. Nov 1999 No 254. AOG website: www.medem.com
 21. Holloman, J. *Securing Access to Health Care-Access to Health Care. President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research*. Vol. 2: March 1983.
 22. Hully S, Summings S, et al. *Designing Clinical Research*. 2nd Edition. Lippincott Williams & Wilkins; Philadelphia, PA.
 23. SOCM11 *Research Design & Survey Methods*. website: www.soc.survey.ac.uk/edu
 24. Lavrakas PJ. *Telephone Survey Methods: Sampling, Selection, and Supervision*. 2nd Edition. From Applied Social Research Methods Series, Volume 7. Thousand Oaks, CA: Sage Publications; 1993.
 25. Pagano M, Gauvreau K. *Principles of Biostatistics*. 2nd Edition. Duxbury Thomson Learning: Pacific Grove, CA; 2000.
 26. Bartlett J, Kotrlik J, Higgins C. *Organizational Research: Determining Appropriate Sample Size in Survey Research*. Information Technology, Learning and Performance Journal. Vol 19, Nov 1 Spring 2001.

